Name _____ Date _____ Period ___

Hypothesis Testing for Proportion

Use a mathematical statement to write the null and alternative hypotheses you would use to test each of the following situations:

1. Is a coin fair?

2. Only 34% of people who try to quit smoking succeed. A company claims that using their chewing gum can help people quit.

3. In the 1950s only about 40% of high school graduates went on to college. Has the percentage changed?

4. A large city's DMV claimed that 80% of candidates pass driving tests, but a newspaper reporter claims that this rate is lower than the DMV's reported value

5. In a 1993 Gallup poll, 47% of the respondents agreed with the statement "God created human beings pretty much in their present form at one time within the last 10,000 years or so." When Gallup asked the same question in 2001, only 45% of those responded agreed. A hypothesis test had been carried out for the difference in public opinion. Is it reasonable to conclude that there was a change in public opinion given that the p-value is 0.37? Explain.

Name _____ Date _____ Period ___

Hypothesis Testing for Proportion

6. Your friend claims that he has a fair die, but wants to bet on the number 6 with you. You suspect that his die is loaded, and you decide to roll the die 200 times. The appropriate hypothesis testing provides a p-value of 0.04. Which conclusion is correct at 5% significance level?

7. The Pew Research Center claims that in 2007 34% of Internet users in the United States have logged onto the internet using a wireless network in their home, at their workplace, or place else. A skeptical citizen collected data from a random sample of 378 adults because he believed that more than 34% of Internet users use a wireless network. 149 of them said they have logged onto the internet using a wireless network. At $\alpha = 10\%$, is there enough evidence to reject the researcher's claim?

8. The Pew Research Center also claims that 87% of Internet users who ever use maps or get driving directions do this online. A map publishing company believes that not that many use maps and driving directions online. In a random sample of 250 adults, 83% say they go online to get maps or driving directions. At $\alpha = 5\%$, is there enough evidence to reject the researcher's claim? At $\alpha = 10\%$ level?

9. In the 1980s it was generally believed that congenital abnormalities affected about 5.2% of the nation's children. Some people believe that the increase in the number of chemicals in the environment has led to an increase in the incidence of abnormalities. A recent study examined 384 children and found that 28 of them showed signs of abnormality. At the 5% level, is this strong evidence that the risk has increased? At the 1% level?

10. A research center estimates that 40% of U.S. adults eat breakfast every day. In a random sample of 300 U.S. adults, 135 say they eat breakfast every day. At the 10% level, is there enough evidence to reject the researcher's claim? At the 5% level?